

E N G E N H O

Engenho, (pronounced en-zhen-yu), is from the Latin word ingenium, and means first of all intelligence, skill or talent in a person, from which it came to mean the application of that quality in an invention, then a machine, and specifically a machine for extracting the juice of sugar cane and making it into sugar. Finally, the idea was extended to include the plantation where the cane is grown, so that not only the mill, but the plantation along with the mill, is known as an engenho. The great modern sugar refineries are not called engenhos; they are usinas. But the engenho, the plantation with its own mill, conserving something of the semi-feudal life of the Brazil of the past, has taken strong hold on the popular imagination. There is a suburb of Rio de Janeiro named Engenho de Dentro (inside sugar mill), and one of the best known folk songs of Brazil is Engenho Novo (new sugar mill). Often the plantation is given a name, as farms are often named in the United States, in accordance with the taste and imagination of the owners. Engenho Tigre (tiger), and Engenho Florescente (flowering), are names that come readily to my memory. A farm in general is a fazenda, if large, and a sítio or chácara if small. But in Pernambuco, according to my observation and recollection, a fazenda is more generally used to refer to a coffee plantation (fazenda de café) or a cattle ranch (fazenda de gado), while a sugar plantation is generally referred to as an engenho, and uniformly so called if it has its own mill.

Sugar cane (cana de assucar, or simply cana) has been grown in Pernambuco since colonial days. The soil and climate are well adapted, and although the planters have had their troubles, such as diseases that have threatened to destroy the crop, it has been through the years the most important item in Pernambuco's economy. Of course not all the state is adapted to the cultivation of sugar cane, though even in the sertão it is often grown in low, damp places; but while in most of Brazil the mountain ranges come almost to the coast, in Pernambuco and its adjoining states of Paraíba and Alagoas there are wide, fertile valleys, and even a hundred miles or more from the coast one

can still find valleys where the sugar cane flourishes. It is planted, not merely in the bottoms, but far up the mountain sides, often on slopes that appear to have an inclination of fifty degrees or more. In all this section there is normally enough rainfall to make one good crop of cane, and often enough for two; but in many places this rainfall is supplemented by irrigation so as to produce three crops a year.

I was interested by the system of irrigation used. Wherever a good spring comes out far up the mountain side a dam is built to retain the water, forming a lake or reservoir, which of course collects water during the rainy season, besides what the spring furnishes. This is used chiefly for irrigating the hillsides, as the bottom lands make out pretty well without it. Often the traveler through this section will see an aqueduct crossing a narrow valley, to take the water for irrigation of the opposing slope. The method of applying the water is simplicity itself. It is conducted in ditches along the top level of the fields to the points of distribution. At these points, on the occasion of watering, the worker lays down a line of ordinary curved roofing tiles, so as to form a continuous trough from top to bottom. When the sluice gate is opened, the water comes leaping down over the tiles, and where the worker wants to divert it into the row, the rows being of course made level, and following the contour of the hillside, he simply takes up a tile and turns it crossways, and the water, blocked by the tile, spreads out along the row, until it is filled, when the worker repeats the process with the next row above, and so on until the field is watered. In some cases where no spring is available a reservoir is built on the top of a hill, and the water pumped into it from the stream in the valley below. Small plantation owners can hardly afford this, but the large usinas frequently utilize this method. There are many of these great refineries scattered over this "sugar bowl" of Brazil, the company frequently owning hundreds of square miles of plantations, with miles of narrow gauge railroads.

Needless to say, there was no sugar shortage in Pernambuco during the war. In Rio de Janeiro, however, and other cities in the South, there were acute shortages, due to lack of transportation facilities, as most transport is by coastal steamers, which were hampered in their movements by the submarine threat.

All sugar cane is sweet, but not all of it will do to chew. There are many varieties of cane, some varieties being preferred to others in particular localities, because of soil or climatic conditions. Some varieties are very hard, and not at all satisfactory for chewing. I tried to learn to identify the best varieties, but found it very confusing. But the Brazilians seem to know by instinct. A Brazilian will sort over a pile of stalks that look about alike to me, and pull one out from underneath, saying, "Here's a good one". And you can depend on it. I visited a sítio one day, and the host cut some stalks of cane for us to chew. As we sat and masticated, he remarked, "I think sugar cane is the choicest fruit that grows; I like it more than any other". Somehow I had never thought of sugar cane as being a fruit. Peeling the cane for chewing is quickly done. An experienced hand, instead of cutting the stalk into joints, and painstakingly peeling each one separately, as I had learned to do in Georgia many years ago, grasps the stalk about the middle, and inserting the knife through the peeling, moves it along to the first joint, where a little wiggle takes the knife through the joint and on to the next, and so on to the end of the stalk. Then the operation is repeated, and so on until in a moment the whole stalk has been peeled. Sugar cane is often offered for sale on the streets already peeled, and cut into rounds about one half inch thick. A bit of the peel, about an inch wide and five or six inches long, beginning with a joint, is split into a dozen or more parts about the size of tooth picks, held together at one end by the joint, and the pieces of cane are neatly impaled on these sticks, forming an umbrella shaped cluster, which is sold, or at least used to be, for about a penny. In this form it is called rolete. At a football game, or in the park of a Sunday afternoon, rolete is much in evidence. It is as much a part of the scene as popcorn at a movie in the United States.

A typical engenho is recognized from afar by its squat, square brick chimney, from which, in the time of operation, black smoke is issuing. On nearer approach one sees a large open shed, piles of cane ready for grinding, and of bagaco, the refuse left after pressing out the juice. The mill is generally turned by a pair of oxen, which go round and round. The juice flows through a home made trough into the vat from which it is fed into the first of a series of copper kettles, fixed over the

wood burning furnace, the liquid being transferred with long handled dippers from one vessel to the next as the boiling progresses. Into the last kettle I saw one of the men pour a few drops from a bottle. He explained that it was to clarify the product, or something of the sort. I asked what it was. Castor oil! This is home industry, and there are no instruments to show when the syrup is ready to crystallize; but men who have worked at it for years have their senses trained to perceive the right point. When this is reached, the liquid is quickly poured into rectangular wooden molds, where it becomes hard almost immediately, forming the brown cakes of sugar, resembling laundry soap in appearance, and known in the local markets as rapadura, which might be roughly translated "hard scraping". It is very sweet and good, although a little strong, and is the only sugar to be found in many Brazilian homes. For some forms of cooking it is preferred to the refined sugar.

Sometimes they make batida (beaten sugar). This is made in small quantities, as a sort of confection, generally for home consumption. To make this, two or three quarts of the liquid are separated when it is almost ready to be poured up, and poured out on a clean surface, where some flavoring substances are added to it, (I know that cinnamon is one, but I am not sure what else) and the mass then beaten up and down with an instrument somewhat like an old fashioned churn dasher. The effect of this is to make the mass more porous. The beating lasts perhaps two or three minutes, and a very nice sense of timing is required, to know the exact moment at which to finish. When done properly it savors of magic, and leaves the beholder gasping.

As the mixture tends to solidify the paddle strokes rise higher and higher, drawing out the mass to a foot or more in height. Finally, as the precise moment is reached, the paddle rises to the top of its stroke, is whisked away, and the mixture, which this very SECOND was fluid, stands upright, a firm and solid column, before your eyes.

The harvesting of sugar cane consists in stripping the leaves from the stalks, and cutting the stalks, and transporting them to the mill. The leaves are usually left on the ground, and often burned after the completion of the harvest, but the tops are often saved for cattle feeding. They may be fed whole, but are often cut into short lengths, by hand, the Brazilian worker revealing his customary and traditional

dexterity in any sort of knife work. Sometimes in a dry season a field of cane may catch fire from the sparks from the wood burning locomotives on the railway, and when this happens the leaves are all burned off, leaving the stalks bare. This is not a serious matter, as the damage to the cane is slight. I have understood that in some countries the fields are fired to save the labor of stripping off the leaves; but at least during the time that I was there the Brazilian planters felt that the damage to the cane from the fire, though not great, more than offset the advantage of the saving in labor thus effected. The cane is transported by ox cart, or in bundles on pack horses, to the mill, on small plantations, or in the case of the large usinas, to the point where it is loaded on railroad cars. One sees whole trainloads of cane moving to these great refineries.

I was told of a custom in connection with the conclusion of the harvest, though I never had occasion to see it. Sugar cane, when completely mature, makes a tassel, somewhat like corn. As the end of the harvest nears, each worker cuts and reserves for himself a fine, tall stalk, with a tassel. Then, when the work is finally complete, the workers, men, women and children, all form a line, and each bearing his stalk with the tassel, march singing up to the plantation house, where of course it is expected that refreshments will be duly provided by the master and mistress.